

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

AOYAMA, Tamotsu
Aoyama & Partners
IMP Building
3-7, Shiromi 1-chome
Chuo-ku, Osaka-shi
Osaka 540
JAPON

| | |
|---|-------------------------------|
| Date of mailing (day/month/year) 09 July 1998 (09.07.98) | IMPORTANT NOTIFICATION |
| Applicant's or agent's file reference 660496 | |
| International application No. PCT/JP97/04056 | |
| International filing date (day/month/year) 07 November 1997 (07.11.97) | |

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

| | | |
|--|----------------------------|--------------------------|
| Name and Address SEKINE, Shingo 4-4-1, Nishi-Ohnuma Sagamihara-shi Kanagawa 229 Japan | State of Nationality JP | State of Residence JP |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☒ the address ☐ the nationality ☐ the residence

| | | |
|---|----------------------------|--------------------------|
| Name and Address SEKINE, Shingo Remonzu 101 2-8-15, Atago Ageo-shi Saitama 362-0034 Japan | State of Nationality JP | State of Residence JP |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☐ the international Searching Authority ☒ the elected Offices concerned
☒ the International Preliminary Examining Authority ☐ other:

| | |
|---|----------------------------------|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer M. Sakai |
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |

Copy for the Elected Office (EC)

PCT/JP97/04056

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

AOYAMA, Tamotsu
Aoyama & Partners
IMP Building
3-7, Shiromi 1-chome
Chuo-ku, Osaka-shi
Osaka 540
JAPON

| | |
|---|-------------------------------|
| Date of mailing (day/month/year) 29 March 1999 (29.03.99) | IMPORTANT NOTIFICATION |
| Applicant's or agent's file reference 660496 | |
| International application No. PCT/JP97/04056 | |
| International filing date (day/month/year) 07 November 1997 (07.11.97) | |

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

| | | |
|---|----------------------------|--------------------------|
| Name and Address YAMAGUCHI, Tomoko 5-13-11, Takasago Katsushika-ku Tokyo 125 Japan | State of Nationality JP | State of Residence JP |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☒ the name ☒ the address ☐ the nationality ☐ the residence

| | | |
|--|----------------------------|--------------------------|
| Name and Address KIMURA, Tomoko 302, 4-1-28, Nishiikuta Tama-ku Kawasaki-shi Kanagawa 214-0037 Japan | State of Nationality JP | State of Residence JP |
| | Telephone No. | |
| | Facsimile No. | |
| | Teleprinter No. | |

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

☒ the receiving Office
☐ the International Searching Authority
☐ the International Preliminary Examining Authority

☐ the designated Offices concerned
☒ the elected Offices concerned
☐ other:

| | |
|---|----------------------------------|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer K. Takeda |
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |
| Form PCT/IB/306 (March 1994) | |

002544662

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| | |
|---|--|
| Date of mailing: 22 May 1998 (22.05.98) | Applicant's or agent's file reference: 660496 |
| International application No.: PCT/JP97/04056 | Priority date: 13 November 1996 (13.11.96) |
| International filing date: 07 November 1997 (07.11.97) | |
| Applicant: KATO, Seishi et al | |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:
20 April 1998 (20.04.98)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|---|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35 | Authorized officer: J. Zahra Telephone No.: (41-22) 338.83.38 |
|---|---|

PATENT COOPERATION TREATY

PCT

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

AOYAMA, Tamotsu
Aoyama & Partners
IMP Building, 3-7 Shiromi 1-chome
Chuo-ku, Osaka-shi
Osaka 540
JAPON



NOTIFICATION OF RECEIPT OF DEMAND

(PCT Rule 61.1(b), first sentence
and Administrative Instructions, Section 601)

Date of mailing
(day/month/year)

1 1. 05. 98

Applicant's or agent's file reference

660496

IMPORTANT NOTIFICATION

International application No.

PCT/ JP 97/ 04056

International filing date (day/month/year)

07/11/1997

Priority date (day/month/year)

13/11/1996

Applicant

SAGAMI CHEMICAL RESEARCH CENTER et al.

- The applicant is hereby notified that this International Preliminary Examining Authority considers the following date of receipt of the demand for international preliminary examination of the international application:

20/04/1998

- This date of receipt is:

- ☒ the actual date of receipt of the demand.
☐ the date on which the proper corrections to the demand were timely received.

- ☐ This date is **AFTER** the expiration of 19 months from the priority date.

Attention: The election(s) made in the demand does (do) not have the effect of postponing the commencement of the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22).

For details, see Annex B to Form PCT/IB/301 sent by the International Bureau and Volume II of the PCT Applicant's Guide.

- ☐ This notification confirms the information given in person or by telephone on:

- Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk - Netherlands
Tel.: (+31-70) 340-2040, Tx. 31 651 epo nl
Fax: (+31-70) 340-3016

Authorized officer

G.L.M. Kruydenberg
070 - 3402277

Telephone No.

"Express Mail" mailing label number: EL379/23/96/5
 Date of Deposit: April 28, 1998
 I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

REC'D 01 MAR 1999

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|--|---|---|
| Applicant's or agent's file reference 660496 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/JF 97/ 04056 | International filing date (day/month/year) 07/11/1997 | Priority date (day/month/year) 13/11/1996 |
| International Patent Classification (IPC) or national classification and IPC C12N15/12 | | |
| Applicant SAGAMI CHEMICAL RESEARCH CENTER et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


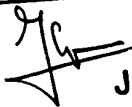
2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consists of a total of _____ sheets.

3. This report contains indications and corresponding pages relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☒ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

| | |
|--|--|
| Date of submission of the demand 20/04/1998 | Date of completion of this report 24.02.99 |
| Name and mailing address of the IPEA/  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Netherlands Tel.: (+31-70) 340-2040, Tx. 31 651 epo nl Fax: (+31-70) 340-3016 | Authorized officer  J. Espen Telephone No. +31/70/340 2625 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP97/04056

I. Basis of the report

1. This report has been drawn up on the basis of *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*

☒ the international application as originally filed

☐ the description, pages
pages
pages

, as originally filed

, filed with the demand

, filed with the letter of

☐ the claims, Nos.
Nos.
Nos.
Nos.

, as originally filed

, as amended under Article 19

, filed with the demand

, filed with the letter of

☐ the drawings, sheets / fig.
sheets / fig.
sheets / fig.

, as originally filed

, filed with the demand

, filed with the letter of

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.
☐ the drawings, sheets / fig.

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2 (c)).

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP97/04056

IV. Lack of unity of invention

1. In response to the invitation (Form PCT/IPEA/405) to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

The International Search Report only refers to subject-matter relating to SEQ ID Nos 1,26 and 51. In consequence, the International Preliminary Examination Report only relates to subject-matter relating to said SEQ ID Nos.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☐ not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
- ☒ the parts relating to claims Nos.

1-5 (in part)

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

| | | | |
|--------------------------|--------|---------------|-----|
| 1. Statement | | | YES |
| Novelty | Claims | 1-5 (in part) | NO |
| | Claims | | YES |
| Inventive Step | Claims | | NO |
| | Claims | 1-5 (in part) | YES |
| Industrial Applicability | Claims | | NO |
| | Claims | 1-5 (in part) | |

2. Citations and Explanations

1.1). SEQ ID Nos 26 and 51 relate to a human fibrosarcoma cDNA sequence coding for an amino acid sequence (SEQ ID NO 1) having homology to a PPA1 protein of the baker's yeast proton ATPase.

1.2). Document D1 (BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, Vol. 168, pp. 574-579, 1990) describes said PPA1 protein which is homologous to the proteolipid subunit of the H⁺-ATPase complex from bovine chromaffin granules.

2.1). In view of the documents cited within the International Search Report, the claimed matter is novel (Art. 33 (2) PCT).

2.2). Having regard to the above mentions, claims 1-5 do not meet the requirements of Art. 33 (3) PCT for the following reasons:
The person skilled in the art, being aware of the fact that the yeast protein PPA1 is homologous to a subunit of the bovine H⁺-ATPase complex, would have regarded it as obvious to try to isolate the homologous and analogous human sequences, involving nothing else than the application of known techniques in a reasonable expectation of success.

3). The IPEA is of the opinion that the sequences relating to SEQ ID Nos 1, 26 and 51 do not have an industrial application/~~Art. 33(4) PCT~~
The alleged function of being important for the growth of human cells is merely defined without experimental proof in analogy to the function of the PPA1 yeast protein.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

| | | |
|--|---|---|
| Applicant's or agent's file reference 660496 | FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) | |
| International application No. PCT/JP 97/ 04056 | International filing date (day/month/year) 07/11/1997 | Priority date (day/month/year) 13/11/1996 |
| International Patent Classification (IPC) or national classification and IPC C12N15/12 | | |
| Applicant SAGAMI CHEMICAL RESEARCH CENTER et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).


These annexes consists of a total of _____ sheets.

3. This report contains indications and corresponding pages relating to the following items:

- I ☒ Basis of the report
II ☐ Priority
III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV ☒ Lack of unity of invention
V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI ☐ Certain documents cited
VII ☐ Certain defects in the international application
VIII ☐ Certain observations on the international application

Express Mail[®] mailing label number: EL 379123/9105
Date of Deposit April 28, 1999
I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner For Patents, Washington, D.C. 20231

[Signature]

| | |
|--|--|
| Date of submission of the demand 20/04/1998 | Date of completion of this report 24. 02. 99 |
| Name and mailing address of the IPEA/  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Netherlands Tel.: (+31-70) 340-2040, Tx. 31 651 epo nl Fax: (+31-70) 340-3016 | Authorized officer <i>[Signature]</i> J. Espen Telephone No. +31/70/340-2625 |

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

I. Basis of the report

1. This report has been drawn up on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)

as originally filed
pages
pages

, as originally filed

, filed with the demand

, filed with the letter of

, as originally filed

, as amended under Article 19

, filed with the demand

, filed with the letter of

, as originally filed

, filed with the demand

, filed with the letter of

- ☐ the claims, Nos.
Nos.
Nos.
Nos.

- ☐ the drawings, sheets / fig.
sheets / fig.
sheets / fig.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.
☐ the drawings, sheets / fig.

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2 (c)).

4. Additional observations, if necessary:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP97/04056

IV. Lack of unity of invention

1. In response to the invitation (Form PCT/IPEA/405) to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

The International Search Report only refers to subject-matter relating to SEQ ID Nos 1,26 and 51. In consequence, the International Preliminary Examination Report only relates to subject-matter relating to said SEQ ID Nos.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☐ not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☐ all parts.
- ☒ the parts relating to claims Nos.

1-5 (in part)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP97/04056

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|--------------------------|--------|---------------|-----|
| Novelty | Claims | 1-5 (in part) | YES |
| | Claims | | NO |
| Inventive Step | Claims | | YES |
| | Claims | 1-5 (in part) | NO |
| Industrial Applicability | Claims | | YES |
| | Claims | 1-5 (in part) | NO |

2. Citations and Explanations

1.1). SEQ ID Nos 26 and 51 relate to a human fibrosarcoma cDNA sequence coding for an amino acid sequence (SEQ ID NO 1) having homology to a PPA1 protein of the baker's yeast proton ATPase.

1.2). Document D1 (BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS, Vol. 168, pp. 574-579, 1990) describes said PPA1 protein which is homologous to the proteolipid subunit of the H⁺-ATPase complex from bovine chromaffin granules.

2.1). In view of the documents cited within the International Search Report, the claimed matter is novel (Art. 33 (2) PCT).

2.2). Having regard to the above mentions, claims 1-5 do not meet the requirements of Art. 33 (3) PCT for the following reasons:
The person skilled in the art, being aware of the fact that the yeast protein PPA1 is homologous to a subunit of the bovine H⁺-ATPase complex, would have regarded it as obvious to try to isolate the homologous and analogous human sequences, involving nothing else than the application of known techniques in a reasonable expectation of success.

3). The IPEA is of the opinion that the sequences relating to SEQ ID Nos 1, 26 and 51 do not have an industrial application/~~Art. 33(4) PCT~~
The alleged function of being important for the growth of human cells is merely defined without experimental proof in analogy to the function of the PPA1 yeast protein.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | | |
|--|---|--|---|
| Applicant's or agent's file reference 660496 | FOR FURTHER ACTION | | see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. |
| International application No. PCT/JP 97/04056 | International filing date (day/month/year) 07/11/1997 | (Earliest) Priority Date (day/month/year) 13/11/1996 | |
| Applicant SAGAMI CHEMICAL RESEARCH CENTER et al. | | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 8 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

"Express Mail" mailing label number: EL37912319105
Date of Deposit April 28, 1999

hereby certify that this paper or fee is being deposited with the United States Postal Service

"Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner For Patents, Washington, D.C. 20231

1. ☐ Certain claims were found unsearchable (see Box I).

2. ☒ Unity of invention is lacking (see Box II).

3. ☒ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing

☒ filed with the international application.

☐ furnished by the applicant separately from the international application,

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is:

Figure No. _____

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP 97/ 04056

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see continuation-sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-5 in part (subject 1. on next sheet)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 26 and 51 and protein relating to
SEQ ID No 1

2. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 27 and 52 and protein relating to
SEQ ID No 2

3. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 28 and 53 and protein relating to
SEQ ID No 3

4. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 29 and 54 and protein relating to
SEQ ID No 4

5. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 30 and 55 and protein relating to
SEQ ID No 5

6. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 31 and 56 and protein relating to
SEQ ID No 6

7. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 32 and 57 and protein relating to
SEQ ID No 7

8. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 33 and 58 and protein relating to
SEQ ID No 8

9. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 34 and 59 and protein relating to
SEQ ID No 9

10. Claims: Claims 1-5 in part

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

DNAs relating to SEQ ID No 35 and 60 and protein relating to
SEQ ID No 10

11. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 36 and 61 and protein relating to
SEQ ID No 11

12. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 37 and 62 and protein relating to
SEQ ID No 12

13. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 38 and 63 and protein relating to
SEQ ID No 13

14. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 39 and 64 and protein relating to
SEQ ID No 14

16. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 41 and 66 and protein relating to
SEQ ID No 16

17. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 42 and 67 and protein relating to
SEQ ID No 17

18. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 43 and 68 and protein relating to
SEQ ID No 18

19. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 44 and 69 and protein relating to
SEQ ID No 19

20. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 45 and 70 and protein relating to
SEQ ID No 20

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

21. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 46 and 71 and protein relating to
SEQ ID No 21

22. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 47 and 72 and protein relating to
SEQ ID No 22

23. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 48 and 73 and protein relating to
SEQ ID No 23

24. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 49 and 74 and protein relating to
SEQ ID No 24

25. Claims: Claims 1-5 in part

DNAs relating to SEQ ID No 50 and 75 and protein relating to
SEQ ID No 25

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP 97/04056

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

Proteins containing any of the amino acid sequences represented by Sequence No. 1 to Sequence No. 2 or by Sequence No. 4 to Sequence No. 25 and DNAs encoding said proteins exemplified by cDNAs containing any of the base sequences represented by Sequence No. 26 to Sequence No. 50. Said proteins can be provided by expressing cDNAs encoding human proteins having transmembrane domains and recombinants of these human cDNAs.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/JP 97/04056

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 C12N15/12 C07K14/705 C12N5/10 C12N15/57 C12N9/48
C12N9/14 C12N15/55

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 C12N C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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| Y | JOURNAL OF MOLECULAR BIOLOGY, vol. 157, no. 1, 5 May 1982, pages 105-132, XP000609692 KYTE J ET AL: "A SIMPLE METHOD FOR DISPLAYING THE HYDROPATHIC CHARACTER OF A PROTEIN" cited in the application see abstract --- | 1-5 |
| Y | SCIENCE, vol. 272, 10 May 1996, pages 872-877, XP002031517 FENG Y ET AL: "HIV-1 ENTER COFACTOR: FUNCTIONAL CDNA CLONING OF A SEVEN-TRANSMEMBRANE G PROTEIN-COUPLED RECEPTOR" cited in the application see the whole document --- -/- | 1-5 |

☒ Further documents are listed in the continuation of box C.

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Date of the actual completion of the international search

12 March 1998

Date of mailing of the international search report

03.07.98

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| Y | J BIOL CHEM, APR 12 1996, 271 (15) P8549-52, UNITED STATES, XP002058790 HOLLOWAY MP ET AL: "A hydrophobic domain of Ca ²⁺ -modulating cyclophilin ligand modulates calcium influx signaling in T lymphocytes." see abstract | 1-5 |
| Y | --- BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS., vol. 168, 1990, ORLANDO, FL US, pages 574-579, XP002058791 APPERSON M ET AL: "A yeast protein, homologous to the proteolipid of the chromaffin granule proton-ATPase, is important for cell growth" see figure 2 | 1-5 |
| P,X | --- EMHUM1 Database entry HSD052 Accession number D89052; 07 Dec 1996 NISHIGORI H ET AL: 'Cloning and chromosomal localization of the gene encoding a protein homologous to the yeast protein PPA1, an proton-ATPase-like protein' XP002058792 see sequence ----- | 1-5 |

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| (54) Title: HUMAN PROTEINS HAVING TRANSMEMBRANE DOMAINS AND DNAS ENCODING THESE PROTEINS | | |
| (57) Abstract <p>Proteins containing any of the amino acid sequences represented by Sequence No. 1 to Sequence No. 2 or by Sequence No. 4 to Sequence No. 25 and DNAs encoding said proteins exemplified by cDNAs containing any of the base sequences represented by Sequence No. 26 to Sequence No. 50. Said proteins can be provided by expressing cDNAs encoding human proteins having transmembrane domains and recombinants of these human cDNAs.</p> | | |

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